Sustaining the honey bee population and apiculture in the Western Cape

The development of this strategy was commissioned by the Western Cape Department of Agriculture and completed in a consultative manner with inputs from various industry stakeholders.

Final Strategy Report
October 2017

Document prepared by:
Agrifusion (Pty) Ltd
1 Andringa Street
Stellenbosch

T +27 21 882 9922
E anneline@agrifusion.co.za
W www.agrifusion.co.za
<table>
<thead>
<tr>
<th><strong>Document control</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project name</strong></td>
</tr>
</tbody>
</table>
| **Appointment agreement** | First Service Level Agreement dated 20 January 2017  
Second Service Level Agreement dated 28 August 2017 |
| **Title of this document** | Final report |
| **Document prepared for** | Western Cape Department of Agriculture – Business Planning and Strategy |
| **Lead service provider** | Agrifusion (Pty) Ltd |
| **Distributed / issued to** | Dr Dirk Troskie – Director, Business Planning and Strategy  
(by e-mail: dirkt@elsenburg.com) |
| **Date of this document** | October 2017 |
Outline of the document

It is widely accepted that the sustainability of the honey bee will contribute to securing food sources for the future. We are dependent upon honey bees as an insect pollinator to ensure the successful growth of many agricultural commodities. The number of managed colonies in a certain area need to be sufficient in contributing towards satisfying the demand for pollination in that area. In order to understand this correlation for South Africa and consider the growth of the agricultural industry in the next few years, we would need to understand the demand and supply and plan for future needs. If we need a certain number of bee colonies, then we need to ensure that there is enough forage for those colonies.

This strategic engagement was born out of the need to address a number of critical issues that are hampering the productivity and sustainability of the apiculture industry and the honey bee (and by implication the fruit and berry industries) in the Western Cape. The process was initiated and funded by the Western Cape Department of Agriculture (WCDoA) and facilitated by Agrifusion as appointed by WCDoA. Agrifusion followed an inclusive process, forming a project task team (PTT) consisting of industry stakeholders to drive the direction of the engagement.

The problem statement for the strategy has been developed together with various stakeholders. The following issues were raised:

- Insufficient bee forage;
- Theft and vandalism;
- Disease management;
- Environmental hazards;
- Lack of regulation and unity in the industry;
- Lack of education;
- Demand for research capacity; and
- Exposure to external factors (such as droughts and fires).

An industry SWOT analysis (exploring the strengths, weaknesses, opportunities and threats) was conducted and certain stretch targets were identified to be reached by 2030. This process assisted the team to start understanding what the strategy should entail. Ensuing from in-depth discussions of the problem statement, stretch targets, a prioritisation of themes and SWOT analysis, strategic themes were clustered together in an attempt to condense the work that needs to be done and move towards a strategy with practical, attainable goals.

The following five themes or work streams have been identified:

1. Sustainable bee forage;
2. Research and innovation;
3. Regulatory framework;
4. Transformation; and
5. Governance and stakeholders.

For each of the themes a number of actions have been identified and forms part of the strategy for execution in the future. These themes are discussed in the body of the document. It should, however, be remembered that the purpose of this document remains to provide a high-level strategy looking at a number of different areas of concern. Follow-up work per theme would have to delve into the detail of implementation.
The execution and further development of this strategy is going to be crucial for the success of the industry. It is therefore suggested that the PTT should be formalised in some manner and continue to meet periodically to drive the implementation of the agenda that was now created through the current engagement. The strategy matrix can be used as a dashboard going forward, where project progress can be measured and reported. However, funding considerations for this process going forward is crucial in the success of further development and implementation.

We would like to thank each project task team member for their valuable contributions during the in-depth discussions as well as ARC for making available their boardroom facilities.
Executive Summary

To date it is widely understood and accepted that the sustainability of the managed honey bee will contribute to food security for the future. This is mainly due to our reliance on managed honey bees for pollinating agricultural crops that are vital for sufficient food production. According to the South African National Biodiversity Institute (SANBI) more than 50 different crops in South Africa are dependent upon insect pollination.

The number of managed colonies in a certain area need to be sufficient in contributing towards satisfying the demand for pollination in that area. In order to understand this correlation for South Africa and consider the growth of the agricultural industry in the next few years, we would need to understand the demand and supply and plan for future needs. If we need a certain number of bee colonies, then we need to ensure that there is enough forage for those colonies.

After various consultations with the beekeeping industry and a formal request submitted by the Western Cape Bee Industry Association (WCBA) for assistance with a strategic plan, the Directorate for Business Planning and Strategy, Western Cape Department of Agriculture (WCDoA), has commissioned an engagement to support the development of a strategy to sustain the honey bee and apiculture in the Western Cape. Agrifusion (Pty) Ltd (“the Service Provider”) was the successful bidder in terms of the Request for Proposals issued by the WCDoA.

This process, thus, was born out of a need that the industry expressed, indicating that they would embrace assistance with strategy direction. The role of the service provider in this instance is to facilitate the process and assist the industry to develop a strategy. The answers that an industry needs to take them to the next level are most likely amongst its own ranks, but it often helps to get external guidance in extracting and applying those answers successfully and sustainably.

The strategy – context and methodology

In order to be able to work as an industry with a unified purpose towards a common goal, it is firstly important to have a common understanding of the problem statement that needs to be “fixed” - defining it in a way that all stakeholders are comfortable with. It is therefore the first step in the methodology to build an understanding of the “as is”. It is a widely accepted fact that the industry is experiencing challenges, but there are still many different angles on those challenges that needed to be packed out.

Once the problem statement is accepted and understood by all stakeholders, the next step is to start building a picture of the ideal future state (the “to be”) in terms of stretch targets or goals to reach within a set timeframe. These targets need to be aspirational yet achievable. It is necessary to understand where one wants to move before one can really start to build a roadmap towards that end goal.

The third step in the process therefore is to set out the roadmap that will guide the industry towards the ideal future state. During this step one needs to identify key enablers and start clustering themes together in order to form work streams and bring more focus to the process. In this process, it is also very important to prioritise the different enablers according to impact and practicality. Then one can proceed to identify projects within each work stream that will contribute towards attaining stretch targets that were previously identified. Terms of reference can be drawn up for each project to provide rough guidelines towards the nature of execution, typical implementing agency, timeframes and budget needs.
This engagement is not only focused on the profitability and all-round success of apiculture in the Western Cape, but it has a much broader systemic focus, looking at the viability of the natural honey bee populations. It is also not only the role of one stakeholder group, but of all different stakeholder groups that have a bearing on this issue.

Two structures have been put in place for the purposes of the engagement:
- Project Steering Committee (PSC); and
- Project Task Team (PTT).

The PSC met periodically to sign off on engagement phases, and provided direction and guidance during the process. The PTT acted as the “engine room” where all the themes of the strategy were discussed, and the problem statements as well as stretch targets and roadmaps set out. The PTT purposefully included a number of different stakeholders representing Government on the Provincial level, researchers, commercial- & smallholder beekeepers, industry representatives and the retail industry. Government at the National level, though not part of the PTT, was requested for input where appropriate.

**Problem statement**

We understand that the honey bee is as important as water, land and air for the production of certain agricultural commodities in the Western Cape. We also know that there is going to be a growing need for pollination services as the agricultural industry grows in the next 10 – 15 years and we are not putting enough energy into managing this critical resource.

The key question is - what do we want to fix?

Out of discussions with the PTT, a number of issues were raised as per the list below. Please note that this is not an exhaustive list, but merely reflects the discussions that took place within the PTT. There might be many other aspects to be regarded as important by role players, and could most certainly be explored in follow-up processes by the industry.

The following issues were raised:
- Insufficient bee forage
- Theft and vandalism
- Disease management
- Environmental hazards
- Lack of regulation, transformation and unity in the industry
- Lack of education
- Demand for research capacity
- Exposure to external factors (such as droughts and fires)

These issues are discussed at some length in the body of the report.

**Industry SWOT analysis**

During PTT discussions, a SWOT analysis was completed by the group as an attempt to recognise the threats and weaknesses (which may be similar to the problem statement), but also the strengths and opportunities that may be necessary to leverage from in the strategy. The points mentioned in the SWOT analysis are briefly discussed in the report.
**Stretch targets**

During PTT discussions, a number of stretch targets were agreed upon. Some of these are realities that the group foresees and others are more based on the wishes of the group that which they would like to pursue. The development of these stretch targets assisted the PTT to understand where they are moving – to define a common goal and be clear about the realities that will be faced in the future. Only once this is clear, can the road towards the future be mapped out. Stretch targets should not necessarily be easily attainable. There should be a measure of “stretch” in these that will drive the industry to reach new heights. This exercise helped the stakeholders participating in the PTT workshops to start moving towards defining research themes that can form part of an innovative, sustainable, practical and attainable strategy for the industry.

**5 Strategic themes**

Ensuing from in-depth discussions of the problem statement, stretch targets, a prioritisation of themes and the SWOT analysis, strategic themes were clustered together to condense the work that needs to be done and move towards a strategy with practical, attainable goals.

The following five themes or work streams have been identified:

1. Sustainable bee forage
2. Research and innovation
3. Regulatory framework
4. Transformation
5. Governance and stakeholders

In preparation for the last workshop, individual PTT members were allocated to specific work streams with a view to developing definable projects that could be initiated within each work stream (in part or in full). Participants were encouraged to develop draft terms of reference, where possible, for possible projects. This could include suggested responsibility allocation, phases and steps to follow, timelines, budget considerations, etc. The intention with this exercise was to start moving towards a practical, attainable strategy for the industry, making use of the inputs of its key stakeholders.

The themes that have been further developed are discussed in the body of the document. Follow-up work per theme would have to delve into the detail of implementation.

**Continued implementation, monitoring and evaluation**

The execution and further development of this strategy is going to be crucial for the success of the industry. It is therefore suggested that the PTT should be formalised in some manner and continue to meet periodically to drive the implementation of the agenda that was now created through the current engagement. The continued efforts of the PTT as a forum would assist greatly to bring this strategy to life and ensure that milestones will be reached within the short to medium term. The strategy matrix could be used as a dashboard going forward, where project progress could be measured and reported. However, funding considerations for this process going forward is crucial in the success of further development and implementation.
### List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC</td>
<td>Agricultural Research Council</td>
</tr>
<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forestry and Fisheries</td>
</tr>
<tr>
<td>DEA</td>
<td>Department of Environmental Affairs</td>
</tr>
<tr>
<td>DEA&amp;DP</td>
<td>Department of Environmental Affairs and Development Planning, Western Cape</td>
</tr>
<tr>
<td>DEDAT</td>
<td>Department of Economic Development and Tourism, Western Cape</td>
</tr>
<tr>
<td>DoH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
</tr>
<tr>
<td>PTT</td>
<td>Project Task Team</td>
</tr>
<tr>
<td>PSC</td>
<td>Project Steering Committee</td>
</tr>
<tr>
<td>SABIO</td>
<td>South African Beekeeping Industry Organisation</td>
</tr>
<tr>
<td>SALGA</td>
<td>South Africa Local Government Association</td>
</tr>
<tr>
<td>SANBI</td>
<td>South African National Biodiversity Institute</td>
</tr>
<tr>
<td>SCBA</td>
<td>Southern Cape Bee Industry Association</td>
</tr>
<tr>
<td>WCBA</td>
<td>Western Cape Bee Industry Association</td>
</tr>
<tr>
<td>WCDoA</td>
<td>Western Cape Department of Agriculture</td>
</tr>
<tr>
<td>WfW</td>
<td>Working for Water</td>
</tr>
</tbody>
</table>
Table of Contents

1. List of definitions and clarifications ................................................................. 12

2. Context .............................................................................................................. 12
   Honey bees and beekeeping in South Africa ...................................................... 12
      Two sub-species ............................................................................................ 12
   Figure 1: Left: Apis mellifera capensis - (Cape honey bee), and Right: Apis mellifera scutellata (African honey bee) .............................................................................. 13
   Pollination services and honey production ......................................................... 13
   Pollination demands ......................................................................................... 13
   Context of this engagement ............................................................................. 14

3. Scope, process and methodology ..................................................................... 15
   Methodology ...................................................................................................... 15
   Governance ......................................................................................................... 16
   Problem statement ............................................................................................ 18
      Bee forage ....................................................................................................... 19
      Theft and vandalism ....................................................................................... 20
      Disease management ....................................................................................... 20
      Environmental hazards ................................................................................... 20
      Lack of regulation and unity in the industry .................................................... 21
      Lack of education ............................................................................................ 21
      Demand for research capacity ........................................................................ 22
     Exposure to external factors such as fires ......................................................... 22
   Industry SWOT analysis ..................................................................................... 22
     Strengths ........................................................................................................... 22
     Weaknesses ....................................................................................................... 23
     Opportunities ................................................................................................... 23
     Threats ............................................................................................................... 23
   Stretch targets .................................................................................................... 24

4. Themes for strategy development ..................................................................... 25
   Introducing the 5 themes .................................................................................... 25
      Theme 1: Sustainable bee forage ..................................................................... 26
         Establishing a Bee Forage Commission ......................................................... 26
         Assess Western Cape usage of land – Cape Farm Mapper .......................... 26
         Develop plant book exploring bee friendly plants ...................................... 27
         Bee friendly campaign with nurseries ......................................................... 27
         Feasibility study to implement a mass bee forage planting project .............. 27
      Theme 2: Research and innovation .................................................................. 29
      Theme 3: Regulatory framework ..................................................................... 29
         Database of beekeepers with DAFF .............................................................. 29
         Industry-level database ............................................................................... 30
         Licensing of beekeepers ............................................................................. 30
         Increased inspection and extension services .............................................. 30
      Theme 4: Transformation ............................................................................... 31
         SA Apiculture Development Chamber ......................................................... 31
         Beekeeping development programmes ....................................................... 31
      Theme 5: Governance and stakeholders ......................................................... 32
         Apicultural Advisory Council .................................................................... 32
         Industry unity ............................................................................................... 33
         Parking lot .................................................................................................... 34
5. The way forward ................................................................. 35
Strategy matrix ................................................................. 35
Continuation of task team for implementation, monitoring and evaluation ........................................ 37
Bibliography ........................................................................ 39
Addendums .......................................................................... 40
Tables and figures

Table 1 - Composition of PSC ................................................................. 17
Table 2: Composition of PTT ................................................................. 17
Table 3: Stretch targets towards 2030 ............................................... 24
Table 4: Typical commodities and products for mass forage planting project .................................................. 27
Table 5: Bee Forage Commission versus Apicultural Advisory Council ......................................................... 33
Table 6: Summary of projects ................................................................. 35

Figure 1: Left: Apis mellifera capensis - (Cape Honey bee), and Right: Apis mellifera scutellata (African bee) ................................................................. Error! Bookmark not defined.
Figure 2: Building a strategic roadmap .................................................. 15
Figure 3: Responsibility towards sustainable honey bees and apiculture ......................................................... 16
Figure 4: Three levels of education ........................................................ 21
Figure 5: Prioritising strategic themes concerning bees and apiculture ......................................................... 25
Figure 6: Developing a governance structure for the apiculture industry ......................................................... 33
1. List of definitions and clarifications

The following definitions are provided in order to develop the framework within which this document should be understood and read.

**Honey bee** – With the exception of the paragraph specifically addressing the wild honey bee population in the Western Cape, in all cases of reference to ‘honey bees’ or ‘bees’, we are referring to managed honey bees (Apis spp) and not feral or wild bees.

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC</td>
<td>Agricultural Research Council</td>
</tr>
<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forestry and Fisheries</td>
</tr>
<tr>
<td>DEA</td>
<td>Department of Environmental Affairs</td>
</tr>
<tr>
<td>DEA&amp;DP</td>
<td>Department of Environmental Affairs and Development Planning, Western Cape</td>
</tr>
<tr>
<td>DEDAT</td>
<td>Department of Economic Development and Tourism, Western Cape</td>
</tr>
<tr>
<td>DoH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
</tr>
<tr>
<td>PTT</td>
<td>Project Task Team</td>
</tr>
<tr>
<td>PSC</td>
<td>Project Steering Committee</td>
</tr>
<tr>
<td>SABIO</td>
<td>South African Beekeeping Industry Organisation</td>
</tr>
<tr>
<td>SALGA</td>
<td>South Africa Local Government Association</td>
</tr>
<tr>
<td>SANBI</td>
<td>South African National Biodiversity Institute</td>
</tr>
<tr>
<td>SCBA</td>
<td>Southern Cape Bee Industry Association</td>
</tr>
<tr>
<td>WCBA</td>
<td>Western Cape Bee Industry Association</td>
</tr>
<tr>
<td>WCDDoA</td>
<td>Western Cape Department of Agriculture</td>
</tr>
<tr>
<td>WFW</td>
<td>Working for Water</td>
</tr>
</tbody>
</table>

2. Context

**Honey bees and beekeeping in South Africa**

To date it is widely understood and accepted that the sustainability of the honey bee is a contributing factor towards global food security in future. This is mainly due to our reliance on bees for pollinating agricultural crops that are vital for sufficient food production. According to SANBI, more than 50 different crops in South Africa are dependent upon insect pollination.

The number of managed colonies in a certain area need to be sufficient in contributing towards satisfying the demand for pollination in that area. In order to understand this correlation for South Africa and consider the growth of the agricultural industry in the next few years, we would need to understand the demand and supply and plan accordingly for future needs. If we need a certain number of bee colonies, then we need to ensure that there is enough forage for those colonies. This critical resource needs to be managed according to scientific data.

**Two sub-species**

South Africa houses two indigenous sub-species of honey bees, namely *Apis mellifera scutellata* (“African bee”) and *Apis mellifera capensis* (“Cape bee”). The Cape bee’s natural habitat is the winter
rainfall regions of the Western and Southern Cape, and the African bee occurs naturally in the northern summer rainfall regions of the country. There is also a hybrid zone where the two regions overlap and the two species therefore hybridize.

The African bee is a more defensive bee with a hardy strain and capable of producing large crops of honey. The Cape bee tends to be more docile (although can also become defensive when provoked), distinguished from the African bee by a darker abdomen and are sometimes referred to as “black bees”. It has a unique characteristic in that the worker bees (females) have the ability to produce both male and female offspring and are thus able to re-queen a colony which has become queen less.

Although the two species differ biologically, they are both essential for the pollination of natural vegetation (maintaining biodiversity), are used extensively in agricultural crop pollination and therefore play a critical role in sustaining food sources for human consumption. With regards to commercial beekeeping, 50% of participating beekeepers’ revenue in the Cape at present come from pollination services and the 50% from honey production and other bee related products. This is substantially different to the rest of the world, where honey production is generally the main income. South Africa has imported more than 2 000 tonnes of honey annually since 2010, and honey production consequently dropped to 40% of what it used to be in the 1980’s.

With the ever-increasing demand for pollination services and a drop in local honey production, there is a need for a comprehensive strategy to address all the concerns around apiculture and the honey bee.

Pollination demands

DAFF currently has over 130 000 managed colonies of honey bees and over 1 800 beekeepers on their records, with more or less 70 000 in the Western Cape. It is, however, estimated that the real numbers (including from unregistered beekeepers colonies) are perhaps 50% more than these official figures. According to Hortgro, the current pollination needs required by bee dependent deciduous fruit crops are 65 000 pollination units – a demand that is currently being met. This requirement is forecasted to increase with at least 30 000 pollination units over the next decade due to new cultivars and general intensification of the agricultural landscape. Wild pollinators will become less important as the natural habitat on the periphery of agricultural landscapes is further reduced. The seed industry is also forecasted to an increased demand for pollination of 30 000 pollination units over the next decade and the berry growers with 20 000 units. One could still include the needs of the almond, macadamia, avocado and cherry industries to name a few that has not been included in calculations. (SA Fruit Journal, 2017).

The fact is that the demand will only keep on increasing and will most likely reach double what is needed today. The question is how are we going to ensure that there are enough bee colonies with sufficient forage to sustain them?

The wild honey bee population
It is also important to note that in the Western Cape, South Africa and Africa honey bees are not only managed for honey production and pollination services, but are also a wild and indigenous species, and that this wild honey bee population is entirely inter-linked with the managed honey bee population. There is essentially no bee breeding in Africa, and hence there are no differences between the wild and managed bee populations. Colonies in managed hives are trapped from the wild population, and swarms issuing from managed colonies return to the wild. Hence, what happens to managed bees happens to wild bees, and *vice versa*. Actions taken by beekeepers and the users of bees for pollination, such as the spreading of bee diseases or the over-harvesting of bee colonies to service pollination needs, therefore impact on the wild honey bee population of the Western Cape, South Africa and conceivably the whole of Africa.

The value of wild honey bees by virtue of their incidental pollination of garden plants, exotic plants, and especially indigenous plants is inestimable, but it is certain that this wild honey bee population is critical in maintain biodiversity and conservation, as well as serving as a reservoir for beekeepers, and especially small-scale beekeepers. Honey bees are a pivotal species in Africa being the most important generalist pollinator on the continent, pollinating 40-70% of indigenous flowering plants. The Cape honey bee, *Apis mellifera capensis* is an essential pollinator of the floristically important Fynbos Biome, being locally adapted to fly under cooler and windier conditions than the northern sub-species of honey bee. Approximately 83% of the fynbos plants are insect pollinated, with the Cape honeybee being the most important generalist pollinator. As regards to the reservoir component, most beekeepers in the Western Cape and the rest of South Africa regularly trap honeybee colonies from the ‘wild’, with this service being crucial to the viability of many of these beekeeping enterprises. Conversely, as commercial and pollination demands for managed bees increase, there is a distinct risk of over-harvesting from the wild honey bee population.

Therefore, the management of a healthy wild honey bee population in the Western Cape (or South Africa) and the management of sustainable apiculture industry in the Western Cape (or South Africa) is one and the same thing, as the bee populations are inextricably linked. Both a healthy wild honey bee population and an efficient and viable beekeeping industry are absolutely essential if the yield and quality of agricultural crops is to be improved, and if these economic sectors are to compete on the world market, and if conservation imperatives are to be served.

**Context of this engagement**

After various consultations with the beekeeping industry and a formal request submitted by the Western Cape Bee Industry Association (WCBA) for assistance with a strategic plan, the Directorate for Business Planning and Strategy, Western Cape Department of Agriculture (WCDoA), has commissioned an engagement to support the development of a strategy to sustain the honey bee and apiculture in the Western Cape. Agrifusion (Pty) Ltd ("the Service Provider") was the successful bidder in terms of the Request for Proposal issued by the WCDoA. This process, thus, was born out of a need that the industry expressed, indicating that they would embrace assistance with strategy direction. The role of the service provider in this instance is to facilitate the process. The answers that an industry needs to take them to the next level are most likely amongst its own ranks, but it often helps to get external guidance in extracting and applying those answers successfully and sustainably.
3. Scope, process and methodology

Methodology

In order to be able to work as an industry with a unified purpose towards a common goal, it is firstly important to have a common understanding of the problem statement that needs to be “fixed” - defining it in a way that all stakeholders are comfortable with. It is therefore the first step in the methodology to build an understanding of the “as is”. It is a widely-accepted fact that the industry is experiencing challenges, but there are still many different angles on those challenges that needed to be packed out.

Once the problem statement is accepted and understood by all stakeholders, the next step is to start building a picture of the ideal future state (the “to be”) in terms of stretch targets or goals to reach within a set timeframe. These targets need to be aspirational yet achievable. It is necessary to understand where one wants to move before one can really start to build a roadmap towards that end goal.

The third step in the process therefore is to set out the roadmap that will guide the industry towards the ideal future state. During this step one needs to identify key enablers and start clustering themes together in order to form work streams and bring more focus to the process. In this process, it is also very important to prioritise the different enablers according to impact and practicality. Then one can proceed to identify projects within each work stream that will contribute towards attaining stretch targets that were previously identified. Terms of reference could be drawn up for each project to provide rough guidelines towards the nature of execution, typical implementing agency, timeframes and budget needs.

Figure 2: Building a strategic roadmap

It should be noted that a strategic engagement of this nature needs to have practical outcomes. Solutions need to be innovative and consider the bigger picture but at the same time they should be practical and attainable, making a tangible difference not only on a policy level but right through to the ground level. Solutions should bring systemic sustainability.

This engagement has as its focus not only the profitability and all-round success of apiculture in the Western Cape, but it has a much broader systemic focus, looking at the sustainability of the honey bee within the apiculture industry. It is also not only the role of one stakeholder group, but of all different stakeholder groups that have a bearing on this issue.
The following groupings all have a responsibility towards the sustainability of the honey bee, albeit on different levels:

- Commercial beekeepers;
- Small-holder beekeepers;
- Land owners;
- Government on different levels (local, provincial and national);
- The wider agricultural industry;
- Organisations of beekeepers (such as beekeepers’ associations); and
- General public.

This strategy development process should therefore be truly systemic in nature as one would need the involvement of all the different stakeholder groups on different levels on subprojects to ensure the overall sustainability of the proposed strategy.

Governance

Two structures have been put in place for the purposes of the engagement:

- Project Steering Committee (PSC); and
- Project Task Team (PTT).

The chair of the PSC is Dr Dirk Troskie of the WCDoA. The steering committee consists of the following individuals:
Table 1 - Composition of PSC

<table>
<thead>
<tr>
<th>Name</th>
<th>Representative body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirk Troskie</td>
<td>WCDoA</td>
</tr>
<tr>
<td>Helen Heyns</td>
<td>WCDoA</td>
</tr>
<tr>
<td>Frans van Wyk</td>
<td>Agrifusion</td>
</tr>
<tr>
<td>Anneline Hugo</td>
<td>Agrifusion</td>
</tr>
<tr>
<td>Phirdy Motala</td>
<td>Agrifusion</td>
</tr>
</tbody>
</table>

The PSC met periodically to sign off on engagement phases, and provided direction and guidance during the process.

The PTT consisted of the following individuals:

Table 2: Composition of PTT

<table>
<thead>
<tr>
<th>Name</th>
<th>Representative body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frans van Wyk</td>
<td>Agrifusion (facilitator role)</td>
</tr>
<tr>
<td>Anneline Hugo</td>
<td>Agrifusion (facilitator role)</td>
</tr>
<tr>
<td>Mike Allsopp</td>
<td>Agricultural Research Council (ARC)</td>
</tr>
<tr>
<td>Phirdy Motala</td>
<td>Beekeeper and member of the service provider team</td>
</tr>
<tr>
<td>Brendan Ashley-Cooper</td>
<td>Beekeeper and Vice Chair of the Western Cape Bee Industry Association (WCBA)</td>
</tr>
<tr>
<td>Tlou Masehela</td>
<td>SANBI, also Representative of the WCBA</td>
</tr>
<tr>
<td>Charles Salmon</td>
<td>Representative of WCDoA</td>
</tr>
<tr>
<td>Robert Post</td>
<td>Beekeeper, involved in large-scale cooperative operations</td>
</tr>
<tr>
<td>Jacques Hurter</td>
<td>Beekeeper and retailer</td>
</tr>
</tbody>
</table>

Riaan van Zyl of DAFF was requested to attend one PTT meeting to brief the PTT on the role of DAFF in beekeeper management, and in particular, on the beekeeper registration process.

The PTT met on the following four occasions for strategic workshops:

- 28 February 2017;
- 28 March 2017;
- 25 April 2017; and

The PTT acted as the “engine room” where all the themes of the strategy were discussed, and the problem statements as well as stretch targets and roadmaps set out. The PTT purposefully included a number of different stakeholders representing Government, researchers, commercial and small holder beekeepers and retail.
It is suggested that this PTT remains after the strategic phase of this engagement has been concluded and continue to meet on a monthly or bi-monthly basis to drive the implementation of the strategy, and that it should be enlarged to include representation from DAFF, the SCBA, the Knysna beekeeping group and retailers. The structure of this group can furthermore be formalised to always include a delegated representative from each of the following organisations or stakeholder groups:

- WCBA
- SCBA
- Knysna group
- Bottlers
- DAFF
- WCDoA
- ARC

Problem statement

We understand that the honey bee is as important as water, land and air for the production of certain agricultural commodities in the Western Cape. We also know that there is going to be a growing need for pollination services as the agricultural industry grows in the next 10 – 15 years.

The number of managed colonies in a certain area need to be sufficient in contributing towards satisfying the demand for pollination in that area. In order to understand this correlation for South Africa and consider the growth of the agricultural industry in the next few years, we would need to understand the demand and supply and plan accordingly for future needs. If we need a certain number of bee colonies, then we need to ensure that there is enough forage for those colonies. This critical resource needs to be managed according to scientific data. It is imperative that more time is spent on the specific problem statement for the Western Cape. The key question is what do we want to fix?

Out of discussions with the PTT, a number of issues were raised. Here follows a brief discussion of these issues so as to set the scene for the further unpacking of the strategy. Please remember that this is a non-exhaustive list of issues that were most emphasised in discussions, but should not be seen as complete or exclusive. There may be many other aspects that may be regarded as important by role players, and can most certainly be explored in follow up processes by the industry.

The issues that will be discussed here, are:

- Bee forage
- Theft and vandalism
- Disease management
- Environmental hazards
- Lack of regulation and unity in the industry
- Lack of education
- Demand for research
- Exposure to external factors
Bee forage

The single largest concern is that there is not sufficient bee forage in the Western Cape. South Africa’s honey bees rely on both indigenous and exotic species (but mostly exotic species like the Eucalyptus), flowering crops, and suburban plants to provide important forage sources all-year round. Honey bees are also the most important generalist pollinators in our natural landscapes, and the most important pollinator for approximately 50 insect pollinated commercial crops in South Africa. It is of utmost importance that we ensure that honey bee populations have good quality food supplies throughout the year. Therefore, it is essential to understand which forage resources will best build and sustain our bee colonies and support honey production.

One of the problems is that six species of Eucalyptus trees, all of which are excellent bee forage, have been targeted as part of DAFF’s Working for Water (WfW) programme because they are invasive alien species that is seen to pose a threat to the natural water sources in certain environmental contexts. Some may argue that the assumption that they are a threat is incorrect, but nevertheless the programme is widely supported. The primary objective of WfW is to increase water yield. Unfortunately, this laudable objective has resulted in the six species being targeted in all environmental contexts, even when they pose no water threat, and in all species of eucalypts being targeted because ‘a gum is a gum’. However, one could make the case that in many landscape contexts the associated benefits of an alien plant such as the Eucalyptus may outweigh the cost of eradication and therefore warrant its continued existence in demarcated areas, even for the currently targeted species. Although research has been done in this regard, it still poses a great challenge and no real solutions have been accepted that are in favour of honey bees, and greater efforts are needed to change the prevailing narrative and to preserve eucalypts as bee forage wherever possible. As an example, both Elsenburg and DAFF in Stellenbosch simply cut down all their gum trees, none of which had any invasive threat, because that was ‘the right thing to do’, and bees and bee forage were deemed unimportant.

It has been considered to explore opportunities of using nature reserves for bee forage. However, this poses many problems as the custodians of nature reserves in the Western Cape, such as Cape Nature, has as its main responsibility to protect wild swarms and do not want any bees from outside to be brought into a reserve. There is also need for clear guidance in terms of the peripheral areas around reserves – creating a buffer around reserves. Although some fynbos species could provide forage to bees, it is actually a small percentage. Greater clarity, however, is needed as regards the policy of Nature Conservation in terms of forage access for managed honey bees.

Concerning forage, it is also important to take cognisance of changes in agricultural crops such as pip-less varieties of citrus and low forage producing canola. These changes radically affect the sources of food for bees. Bees’ availability furthermore can be an unnecessary restricting factor in economic growth and job creation in the fruit industry and other related industries. Insufficient forage subsequently leads to insufficient honey- and pollen reserves to carry bees through winter or a natural period of a forage shortage.

It has already been mentioned that the pollination demand of the agricultural industry will more or less double over the next 10 years according to relatively conservative forecasts. There is no way that that demand will be met if drastic measures are not put in place to increase the forage cake, allowing more colonies to be sustained. If there is not going to be sufficient forage, then there will not be enough honey bees and therefore one can understand that this issue is a great priority for the industry to address sooner rather than later. It is accepted by the PTT that most (70%) of the ‘implementation’ energy should be allocated to this theme after the strategic phase of the engagement.
Theft and vandalism

Theft and vandalism poses a great threat to beekeepers as they continuously struggle to find secure sites for their hives. There is a significant link between forage and vandalism. Good bee forage may exist, but if the bees are not safe on the specific site, it does not help to have good forage that is unused.

It should also be acknowledged that other natural predators may cause a significant threat to honey bees. These may include baboons, ants and honey badger.

In this regard, man-made vandalism is the biggest concern. Less than 5% of beekeepers own their own land where they keep less than 5% of their bees. Beekeepers are therefore reliant on the goodwill of other landowners for their beekeeping activities. Therefore, hives are often quite exposed and beekeepers are discouraged as they struggle to make ends meet with the great impact of theft and vandalism.

Disease management

Disease management is a great concern for beekeepers and there is a growing need for research in this regard. South Africa was previously free of most of the major diseases and pests that harm bees, but the arrival of tracheal mites (1995), varroa mites (1997) and American Foul Brood (AFB-confirmed February 2009) has ushered in a new season for beekeepers. All the major pests and diseases in the world are now present in South Africa.

AFB, internationally considered the most serious disease, has in the past eight years greatly affected bees in the Western Cape with 10%-20% of colonies in small beekeeping operations and 40% of colonies in large commercial operations becoming affected. There is hope that this situation has now improved, but until proper inspection and research services have been put in place, we will not know for sure.

AFB is caused by the spore-forming bacterium *Paenibacillus larvae*. Bee larvae up to three days old become infected by ingesting spores that are present in their food. Spores germinate in the gut of the larva and the vegetative form begins to grow, taking its nourishment from the larva. Bacterial growth causes eventual death of the larva. The vegetative form of the bacterium will die but not before it has produced millions of spores. Each dead larva may contain as many as 1 billion spores.

Disease spread rapidly throughout the hive as the bees, attempting to remove the spore-laden dead larvae, contaminate brood food. Beekeepers may also spread the disease by moving equipment (frames or supers) from contaminated hives to healthy ones. Registration of all hives by beekeepers would however greatly assist with disease management.

Environmental hazards

Environmental hazards may include general pollution, heavy metals and possible electromagnetic pollution, but most of all agrochemicals. Recent developments in this field include the development of a Pollination Services Charter to build relationships between crop growers, the crop protection industry and bee farmers in South Africa. This charter states in summary form what each party should undertake to improve relationships and acknowledge the needs of others. This is a step towards greater sustainability.
Lack of regulation and unity in the industry

Furthermore, there is a lack of protection of honey bees as a natural resource, which goes hand-in-hand with a lack of proper regulation of beekeeping. We estimate that more or less 50% of beekeepers in the Western Cape are actually registered with DAFF and a still smaller percentage are members of a beekeepers’ association like WCBA or SCBA. This makes regulating the industry and protecting it against threats like diseases and pests near impossible. Furthermore, there needs to be better protection against theft and vandalism, culminating in improved enforcement measures.

The industry could also be a lot more successful in entrenching a strategy like this one if it speaks with a unified voice. Therefore, there needs to be improved organisation of the industry as a whole with better representation on industry associations as well as better communication between different associations. There are currently three different industry associations (due to geographic location) in the Western Cape, namely the Western Cape Bee Industry Association (WCBA), the Southern Cape Bee Industry Association (SCBA) and the Knysna Beekeepers Group.

Lack of education

Education is most needed on three basic levels:

- Beekeepers: There are many small-scale hobbyists who do not necessarily have a solid foundation of the basic knowledge surrounding beekeeping.
- Wider agricultural sector / producers: Producers of agricultural commodities that rely on pollination services should be educated on the use of harmful pesticides, the use of cover crops that will provide bee forage, the use of only registered beekeepers at a market related value, etc.
- General public: There is a great need to educate the general public in the importance of honey bees as an ecological and agricultural resource that should be protected, the critical role that bees play in ensuring our food sources for the future and also how they could contribute to bee forage by merely planting ‘bee friendly plants’ in personal home gardens.

*Figure 4: Three levels of education*
Demand for research capacity

As recently as the mid-1990’s South Africa had a thriving and substantial honey bee research section housed in the ARC Plant Protection Research Institute, staffed with 5 researchers, 4 technicians and 6 assistants. The bee section had two centres in Pretoria and Stellenbosch, good apiaries and resources, dealing with commercial pollination, bee forage, pests and diseases, information dissemination and beekeeping training. Unfortunately, however, this capacity has decreased to 1 researcher in Stellenbosch with no support staff. At present the ARC honey bee research section is under great pressure with a serious lack of capacity and infrastructure, as well as no succession planning.

Considering all the areas of concern already discussed, it is evident that an appropriately funded and staffed research centre is needed now more than ever before. However, funding alone is not going to be sufficient. The capacity and institutional knowledge needs to be developed first before funding could be allocated for specific research themes.

Exposure to external factors such as fires

A problem statement for the apiculture industry would not be complete without addressing the risks posed by exposure to external factors such as fire damage and drought. Recent fires in the Knysna area (June 2017) has had a devastating effect on the local beekeeping industry as more than 50 beekeepers were affected and losses of more than 300 hives were reported. The forage loss resulting out of this disaster will take at least five years to recover. Although the rest of the beekeeping fraternity would like to support these beekeepers by sending equipment and honey bees into the area, the beekeepers may risk contamination of the area with the disease AFB. The Southern Cape, especially Knysna, is currently still free of AFB. Fires also contributed to sanitising the area of any spores which may have been hidden. If equipment or honey bees are brought into such an area, it may have the negative consequence of contaminating it again and potentially leading to compromising the long-term sustainability of those who have lost so much already.

Industry SWOT analysis

During PTT discussions, a SWOT analysis was completed by the group as an attempt to recognise the threats and weaknesses (which may be similar to the problem statement), but also the strengths and opportunities that may be necessary to leverage from in the strategy. The points mentioned in the SWOT analysis will be briefly discussed here:

Strengths

The following strengths were identified by the group:

- Demand for more hives for commercial pollination services;
- The industry has a high level of existing institutional knowledge (and experience);
- SA delivers high quality honey, but low quantities;
- SA has a diversity of floral sources; and
- The industry has high quality honey bees
- Rapidly increasing demand for honey in South African markets.
Weaknesses

The following weaknesses were identified by the group:

- Compliance is low;
- Beekeeping standards are poor to very poor;
- There are no institutional structures;
- There is a reluctance amongst beekeepers to register with DAFF (regional and provincial structures);
- There is a fundamental shortage of forage, exacerbated by circumstances;
- Uncontrolled large-scale funding of new entrants (often through Government programmes) without necessary capacity building and an evaluation system (not sustainable) which results in there being too many beekeepers and too many non-commercial bee colonies, all straining the available forage reserves;
- There is a shortage of knowledge among start-up and hobbyist beekeepers;
- No proper database of beekeepers exists;
- No disease monitoring programme although disease monitoring regulations do exist;
- Producers are abusing pesticide application and there is a lack of regulation in the application of pesticides;
- Involvement of stakeholders in sustainable beekeeping;
- There is no Government level consultative forum (National & Provincial); and
- Very poor market penetration (honey).

Opportunities

The following opportunities were identified by the group:

- Demand for more hives;
- Ever increasing pollination demand;
- Increasing recognition of high quality honey;
- Unutilised land (possibly with potential for forage);
- Research & Development on forage & better pollination procedures – using honey bees in a better way;
- Education and creating awareness;
- Creating better institutional control;
- Creating a database of beekeepers;
- Building a disease management programme;
- Market force to assist in driving sustainable beekeeping (standards of retailers etc.);
- Bee-friendly labels – quality assurance for all bee-related products;
- “Pollinator-friendly” / bee-friendly – agri products;
- Identify crop varieties that get a rebate;
- Local market for honey – great room for expansion (marketing opportunities); and
- Urban beekeeping.

Threats

The following threats were identified by the group:
• Ever increasing number of beekeepers without resources & knowledge;
• “bee-havers” – people who do not understand how to “keep” bees;
• Unregulated opportunities for pollination & honey;
• Fundamental shortage of forage;
• Honey imports and fake honey;
• Lack of regulation;
• Vandalism & theft;
• Eucalyptus removals (Working for Water) – and other forage concerns;
• Institutional control structures (customs controls etc.);
• Diseases – no monitoring programme;
• Changing cultivars - citrus; canola etc.; and
• “In essence, we need to consider how we will manage the resource before we would have to manage without bees…”

Stretch targets

During PTT discussions, a number of stretch targets were agreed upon. Some of these are realities that the group foresees and others are more based on the wishes of the group that which they would like to pursue. In the following table the existing situation is compared with the stretch targets for what the group envisages for 2030:

Table 3: Stretch targets towards 2030

<table>
<thead>
<tr>
<th>Existing – 2017</th>
<th>Stretch target - 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAFF's current statistics:</strong></td>
<td>Numbers will most probably double.</td>
</tr>
<tr>
<td>1 828 beekeepers/137 872 managed colonies in South Africa.</td>
<td></td>
</tr>
<tr>
<td>755 beekeepers/69 205 managed colonies in the Western Cape.</td>
<td></td>
</tr>
<tr>
<td>Fragmented pollination industry</td>
<td>Holistically managed Cape bee population (Western- and Eastern Cape)</td>
</tr>
<tr>
<td>Insufficient forage; unregulated sites</td>
<td>All forage sites to be registered and thereby ensuring better planning for the needs of bees; substantial forage creation and development is also necessary</td>
</tr>
<tr>
<td>Pollination to honey ratio of 50:50</td>
<td>Pollination to honey ratio of 80:20</td>
</tr>
<tr>
<td>No stakeholder forum</td>
<td>Established Apicultural Advisory Forum</td>
</tr>
<tr>
<td>One extension officer in the WC – not full time</td>
<td>Increased number of advisory specialists (4)</td>
</tr>
<tr>
<td>Insufficient enforcing officials</td>
<td>National enforcing officials</td>
</tr>
<tr>
<td>Voluntary Code of Conduct (standard)</td>
<td>Compliant to Industry Code of Conduct</td>
</tr>
<tr>
<td>Bee Industry currently classified under National DAFF - Plant Health</td>
<td>Classification under National DAFF - Animal Health</td>
</tr>
<tr>
<td>Limited export opportunities (EU markets inaccessible)</td>
<td>Open up export markets</td>
</tr>
<tr>
<td>Lack of skills/capacity</td>
<td>Training of beekeepers (tertiary, certificate)</td>
</tr>
</tbody>
</table>
This exercise helped the stakeholders participating in the PTT workshops to start moving in discussions from merely stating the problem with a different angle towards defining research themes that can form part of an innovative, sustainable, practical and attainable strategy for the industry.

The following prioritisation exercise was also discussed and completed during PTT sessions:

*Figure 5: Prioritising strategic themes concerning bees and apiculture*

Participants were requested to classify strategic themes in terms of its impact (high or low) and whether it is a new or existing theme. It became evident through this exercise that the two largest clusters are bee forage and the regulatory framework. Although bee forage has been a strategic concern for some time (it is nothing new...), it is regarded as the single largest concern that needs to be addressed going forward. It will therefore also have pre-eminence as a main focus going forward.

### 4. Themes for strategy development

Introducing the 5 themes

Ensuing from in-depth discussions of the problem statement, stretch targets, a prioritisation of themes and SWOT analysis, strategic themes could be clustered together in an attempt to condense the work that needs to be done and move towards a strategy with practical, attainable goals.

The following five themes or work streams have been identified:

1. Sustainable bee forage;
2. Research and innovation;
3. Regulatory framework;
4. Transformation; and  
5. Governance and stakeholders.

Before the last workshop, participants to the PTT were allocated to the 5 themes / works streams for the purpose of coming to the meeting with a suggestion towards a definable project that will address the theme (in part or in full). Participants were encouraged to develop draft terms of reference, where possible, for possible projects. This could include suggested responsibility allocation, phases and steps to follow, timelines, budget considerations, etc. The intention with this exercise was to start moving towards a practical, attainable strategy for the industry. These terms of reference suggestions were discussed at the last workshop and form the basis of the content to follow here.

It should be remembered that the purpose of this document remains to provide a high-level strategy looking at a number of different areas of concern. Follow-up work per theme would have to delve into the detail of implementation.

Theme 1: Sustainable bee forage

The suggested approach towards increasing bee forage in a sustainable manner is multi-faceted, including a number of different angles to the same problem. These will be briefly discussed here.

Establishing a Bee Forage Commission

The idea of a bee Forage Commission with Governmental representation is spurred on by the reality that bees are a national resource that should be protected. This commission can take the responsibility of driving many of the other initiatives as mentioned hereafter.

The main purpose of the commission will be to direct and coordinate, and where necessary, lobby with the appropriate governmental levels on issues that need attention pertaining to bee forage. Although this commission should ideally be set up on National Government level, it is suggested that the concept be introduced on a Provincial level first and then it can be rolled out to a national level.

The proposed composition of the Bee Forage Commission is as follows:

- Representatives from the beekeeping industry;
- Grower representatives;
- Department of Environmental Affairs and Development Planning;
- Department of Rural Development and Land Reform;
- DAFF
- Agri Western Cape;
- Municipalities – SALGA;
- CASIDRA;
- Department of Water Affairs;
- WCDoA and Forestry;
- SANBI;
- ARC;
- Universities in the Province; and

Assess Western Cape usage of land – Cape Farm Mapper

The Cape Farm Mapper is a GIS system that provides the user of layers of information pertaining to the land area of the Western Cape. The different agricultural commodities can be viewed as layers on
this computer-based system. It is possible to add a layer of information to this design to indicate which of the agricultural crops planted are bee friendly. With such knowledge, the Forage Commission will be much better equipped to suggest strategies for agricultural development in the Western Cape to include the appropriate cover crops, rotational farming techniques and inter cropping. These ideas should be explored further.

Develop plant book exploring bee friendly plants

The right strategy needs to be put in place to best communicate the existence of this book and its worth to a wider audience.

Bee friendly campaign with nurseries

A campaign will be run with nurseries in the Western Cape to raise awareness for buying bee friendly plants (similar to previous campaigns for water-wise gardening). Tags can be put on all plants that provide bee forage and brochures may be distributed to customers to explain the advantages of planting these plants. This campaign can be rolled out further to include creating awareness in general towards bee friendly planting, albeit in private gardens or for agricultural purposes.

Feasibility study to implement a mass bee forage planting project

One of the suggestions from the PTT group is to investigate the possibility of a large-scale agro-forestry project in the Western Cape for the main purpose of developing forage for bees, but with an income also derived from secondary products produced on the land. The design of this project, in summary, entails the following:

- It is suggested that a Public Private Partnership (PPP) needs to be established to manage this project.
- State-owned land, that is not primarily suited to traditional commercial agriculture or other forms of urban development, will be identified to use for this planting initiative.
- A combination of commodities that provide good bee forage, will be planted on these estates, as per an agro-forestry concept (multi-product planting).
- The main purpose of the enterprise will be to provide forage, which subscribing beekeepers can rent from the PPP.
- A secondary purpose is to produce agricultural products from the commodities planted.

The types of commodities that is suggested to be planted, as well as products that may be derived, is indicated below:

*Table 4: Typical commodities and products for mass forage planting project*
The suggestion is that an in-depth feasibility study should first be conducted to investigate this opportunity and its likelihood. A more in-depth proposal was created by Mr. Robert Post and is available for further reading on this matter.

There is a very good opportunity at present to assess this type of situation. Some 20 years ago, when gums were first targeted, a commercial beekeeper named Paul Ransom purchased land near Darling, and planted it with >50 types of gums so that it would have forage to sustain bees all through the year. It is now a mature property, and can hold about 800 colonies of bees.

The economics of such schemes can be gainfully investigated by a proper economic analysis of this test case.

It was, however, anticipated by the group that although this project will have great benefit for bees and beekeepers, it is probably very unlikely that large pieces of land firstly is still available that will be suitable for a development of this scale, and secondly that designing an agricultural project of this nature primarily for bee forage is most likely not going to be realistic. It will perhaps be more beneficial to influence decision-making with regards to all land owners by incentivising them to plant bee forage through tax rebates, water levy rebates, free plants, etc.

The conclusion of the forage discussion is that a Forage Commission needs to be established sooner rather than later to further investigate opportunities of planting forage reserves on available land (according to Cape Farm Mapper) in the Western Cape, as well as other plans for increasing forage.
One would need to consider different approaches towards forage development through Government as well as private sector.

Theme 2: Research and innovation

Research and innovation in the South African beekeeping industry is going to be crucial not only for generating new knowledge and skills, but for the overall success and sustainability of the industry. Research based on scientific evidence should drive decision-making processes. Given that a viable, healthy and vibrant honey bee population is critical to the food security and development goals of South Africa, it is critical that a research and support structure is in place to secure and protect this critical resource.

Issues that need to be addressed are:

1. should honey bee research and support be state funded and managed, or funded by means of contract research;
2. should this honey bee research and support be housed in an agricultural parastatal such as the Agricultural Research Council (ARC), in universities, or directly in state departments;
3. should honey bee research be managed regionally, or nationally; and
4. given that the current capacity for honey bee research in South Africa is near zero, how best might capacity be developed?

Once an outcome is reached in terms of the suggested design of an extended research component and funding model, implementation can take up to 2 years and such a centre can cost up to R8 million per year. Mike Allsopp from the ARC has done extensive budgeting and planning in this regard and his proposal for honey bee research is available for perusal.

Theme 3: Regulatory framework

Database of beekeepers with DAFF

It is suggested that a proper database should be developed of beekeepers’ information. Currently DAFF keeps a database of registered beekeepers but this database is by far not complete and it is also not very user friendly. It should be automated and the method of collection of information should be by an electronic system that updates the database automatically.

Although prosecution should probably be considered as a means to get beekeepers to register, there is currently no capacity for such prosecution. It is therefore emphasised that the automation of this process should be seen as a priority in order to free up the time of officials to follow up those beekeepers who fail to register annually.

The following steps are suggested:

- The idea should first be promoted in order to get buy-in from DAFF.
- The specific data needs should be determined – what information do we need from beekeepers?
- It is going to be crucial that the beekeepers’ bodies support DAFF in collecting information. Any current demand coming from DAFF to the beekeepers for more information will drive beekeepers away from registration, and away from DAFF. Furthermore, any further demand for information will be illegal, unless the legislation is changed.
• The tender instructions should be developed for designing and implementing an automated system for information collection, capturing, storing and retrieving.
• The new system can then be implemented.

Industry-level database

Further to DAFF’s list of registered beekeepers, the industry also has a need for more complete details of beekeepers on a National basis. This could be done as a collaborative effort between different beekeepers’ associations on Provincial level, as well as SABIO on a National level.

Licensing of beekeepers

Due to SA bees’ natural behaviour (wild swarms), it is just too easy to become a beekeeper. There is no basic formal qualification required. Beekeepers who do not economically depend on beekeeping, are sometimes seen to pose a risk to commercial beekeepers with the spread of bee diseases and “subsidised” products and services. Unfortunately, beekeeping in SA is not well organised and there are currently no SETA-accredited courses available locally. It is envisaged that beekeepers should be licensed in the future (along with their registration with DAFF) once they have completed a qualification of some sort. We understand that there may be a lot of opposition to this, but it will nevertheless be a valuable exercise for the industry.

This suggestion will not be actioned now, but it will remain on the strategic agenda of the industry to reconsider in a few years’ time.

Further to the licensing of beekeepers, it was also considered whether we should not also drive for forage site registration – in order to get each forage site in the Western Cape registered and linked to a certain beekeeper (although not necessarily the owner of the land) and specific hives. Site registration and general licensing of beekeepers may go hand-in-hand in the future. The decision was made, however, to leave these actions on the agenda for further exploration and not necessarily action right away. The first priority remains to increase the ‘forage cake’ before we push for an increase in regulations to this end.

Increased inspection and extension services

It has been reiterated in group discussions that there is a great need for increased capacity in terms of extension and inspection services. There is a difference between the two concepts (the one being more focused on educating and supporting the beekeeper through extension and the other focusing on regulating and prosecuting if necessary). Some members of the PTT were of the opinion that the extension and inspection services need to be kept separate, as , it cannot be the same person that needs to deliver the service the ‘carrot and the stick’. Others in the PTT felt that the services could indeed be integrated, and could also include a beekeeping development component. It is recommended that a suitable structure for inspection/extension services be thoroughly and speedily investigated. The suggestion from the PTT industry representatives is that 6 to 8 people should be appointed as extension officers on a National level to assist with bee-related issues with a focus on extension. 4 people will be sufficient in the Western Cape.

The main concern is a lack of capacity as one extension officer currently spends 20% of his time on bees and beekeeping. Currently there are more or less 80 extension officers operating under WCDoA in the Western Cape over all industries. WCDoA suggests that these extension officers should be trained, empowered and equipped to deliver the much-needed service to the public. However, the industry does not see this as a plausible solution, and the PTT agreed with this assessment as
beekeeping extension/inspection officials need special skills to be able to deliver a service, not least of which is the ability and equipment needed to work with dangerous honey bee colonies. Although the general officer should have very basic bee knowledge, he would need to refer specialist cases to the specialist extension officer when necessary. These specialist bee extension (and development officers) and would need extensive training to understand the finer nuances of apiculture and the intricacies of the industry.

It is envisaged that bees will now (after much deliberation) be moved in DAFF from Plant Health to Animal Health. It is still to be seen whether specialist bee inspectors will be appointed or general inspectors utilised to do this task. The PTT is of the opinion that there needs to be specialist bee inspectors by DAFF. DAFF need to appoint inspectors and become more visible on ground level.

Theme 4: Transformation

The industry realises that, in order to have any meaningful conversations with higher levels of Government, it needs to be able to indicate its ongoing support for transformation and see it as a valuable key to unlocking other areas of assistance.

SA Apiculture Development Chamber

One of the main concerns is that the industry does not have any idea of the true demographics of the industry. It is also evident through participation of small-scale beekeepers in the PTT that they often experience constraints pertaining to market access, access to funding, etc.

It is suggested that the SA Apiculture Development Chamber should be developed to further investigate transformation in the industry and create a platform where all beekeepers can be better integrated into the economy in a way that is sustainable. One of the concerns raised, for instance, is that through empowerment projects large numbers of beekeepers are provided with the necessary means to start a beekeeping business but they do not necessarily have the critical know-how to run such a business or the support in terms of a market for their honey and pollination services. Furthermore, the empowerment of large numbers of beekeepers should only be done in relation to the available forage for bees, which is often not the case.

It is recommended that a survey is conducted to establish how many black beekeepers is there, what financial support they had received, what the impact was on their enterprise and how it can be improve (Compilation of a good questionnaire).

It should be considered by the industry whether the Development Chamber should typically be a body that stands loose from other industry organisations or whether it should be incorporated as a division of existing industry bodies. The latter seems to be a more feasible and sustainable solution.

Beekeeping development programmes

It is uncontested that the development of beekeeping amongst the previously disadvantaged is crucially important to beekeeping in South Africa, both to transform the beekeeping industry and as an empowerment vehicle for poor and destitute South Africans. This has been recognized by the government in terms of it supporting a mentorship programme currently operated by SABIO, and in terms of a multitude of state-funded beekeeping development programmes. In addition to government funded programmes, there have also been many international and business funded
beekeeping development programmes. It is conservatively estimated that far more than R50 million has been spent on such programmes in South Africa in the past decade.

The problem is, that by any reckoning, these programmes have delivered relatively little in terms of tangible, sustainable results. There remain practically zero non-white commercial beekeepers in South Africa and very few of the existing development programmes are financially sustainable. Most (or all) of such projects require continued funding for their existence and continuation.

South Africa is not alone in this regard - it has been reported that more than 99% of beekeeping development programmes worldwide fail, or are not sustainable. And yet there have been grand successes, the complete transformation of the Turkish beekeeping sector being a stellar example. It is suggested that the reason why most such projects fail is that they are poorly conceived and structured, that they are inappropriately scaled, and that are often driven by woolly feel-good sentiments rather than by sound economic and agricultural principles.

The ARC has long been involved with beekeeping development programmes, with funding coming from many (primarily government) sources, and dozens of communities having been trained. It is suggested that the ARC should no longer be directly involved in beekeeping development projects, but should rather become an advisory service with respect to beekeeping development for government and other potential funders, both in South Africa and elsewhere in Africa. Specifically, it is suggested that the ARC:

• Be commissioned to thoroughly and critically review as many existing and past beekeeping development programmes in South Africa as possible; determine what has worked and what has not worked; and develop a blueprint for beekeeping development in South Africa based on these findings;
• Be used to audit and assess continuing or new state funded beekeeping development programmes (and non-state funded programmes, should they be paid to do so); and continue to use this information to refine the beekeeping development blueprint;
• Act as an advisory body for potential government and other funders wishing to be involved in beekeeping development programmes;
• Act to train beekeeping development practitioners with regards to the blueprint and how best to facilitate beekeeping development in South Africa; and
• Retain a database on all beekeeping development projects in South Africa.

Theme 5: Governance and stakeholders

Apicultural Advisory Council

It is suggested that the state actively re-institute an Apicultural Advisory Council to manage the interests of honey bees and beekeepers in South Africa. This council should have representatives from organized beekeeping, development beekeeping, importers, retailers, growers using bees, the conservation sector, honey bee researchers, the bee inspection service, DAFF, DTI, DoH, DEA and be under the chairmanship of a senior DAFF official.

The Council should be an officially recognized body, advising the various Ministers with regards to beekeeping and honeybee matters, and its operation should be managed and paid for by DAFF.

All honey bee matters would fall under the ambit of this council, *inter alia*, research priorities, legislation, bee disease management plans, and the development priorities and procedures. Funding and support for actions will be both government and industry based, with the latter funded by levies
(both grower organizations and beekeeper organizations). The government would fund core functions, with other projects funded by special interest groups. A very similar structure has recently been developed to manage honey bees and the beekeeping industry in countries such as Australia and the USA (see http://www.rirdc.gov.au/programs/established-rural-industries/honey-bee/honey-bee_home.cfm).

The difference between the Apiculture Advisory council and the Bee Forage Commission is that the latter is going to be more technically focused and the former more governance-focused. Furthermore, the Bee Forage Commission is suggested to be a Provincial body whereas the Apiculture Advisory Council will be a National body.

Table 5: Bee Forage Commission versus Apicultural Advisory Council

<table>
<thead>
<tr>
<th>Body</th>
<th>Type of function</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apiculture Advisory Council</td>
<td>Governance function</td>
<td>National</td>
</tr>
<tr>
<td>Bee Forage Commission</td>
<td>Technical function</td>
<td>Provincial</td>
</tr>
</tbody>
</table>

This concept was accepted by DAFF in principle and therefore the next step is to prepare full Terms of Reference (to be given to DAFF on 11 August 2017). It will be beneficial, coming out of this strategy, that the WCDoA states its support for this National body. It is further suggested that the Bee Forage Commission resides under this National body. It could further be suggested that the Apiculture Development Chamber should also be a body that resides under the National Apiculture Advisory Forum.

This governance structure will benefit the industry going forward as it established clearer links to Provincial as well as National Government so that the industry will be in a better position to lobby important issues with Government should the need arise.

Figure 6: Developing a governance structure for the apiculture industry

Industry unity

This discussion around governance leads one to a fundamental concern, which is the unity of the industry. Only looking at the Western Cape, we have three different beekeepers’ associations:

- Western Cape Bee Industry Association;
- Southern Cape Bee Industry Association;
- Knysna Beekeepers Group; and
It should be considered to merge these associations into one body for the sake of greater unity. Although there are practical concerns in terms of geographical distance between the areas, it is possible to have different regional branches of a single organisation. This is something that the three bodies would need to liaise on and find a communal plan for. It is furthermore debated whether such an organisation should not be based on *Capensis* and therefore include the Eastern Cape beekeepers. Each region can meet on their own but there can be greater unity as they all still resort under one umbrella organisation that is focusing on *Capensis*. It will further be beneficial to increase the membership numbers to be more representative of the industry as a whole.

Parking lot

There are a number of issues that will not be included in the strategy at this point but added to the ‘parking lot’ for future reference. These are:

- Market considerations; and
- Education and awareness.

These considerations are not a priority at this point and will be considered at a later stage by the industry.
5. The way forward

Strategy matrix

The following strategic matrix provides a high-level look at the different proposed projects that form part of the strategy:

Table 6: Summary of projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Responsibility for execution</th>
<th>Timeline indication</th>
<th>Priority level (1=low; 5=high)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing a Bee Forage Commission</td>
<td>WCDoA</td>
<td>Within 6 months</td>
<td>5</td>
<td>This project should be seen as number one priority as this commission will be instrumental in further successful roll-out of other projects.</td>
</tr>
<tr>
<td>Extra layer to Cape Farm Mapper</td>
<td>WCDoA, Forage Commission</td>
<td>Within 6 months</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bee-friendly plant book</td>
<td>SANBI</td>
<td>Within a year</td>
<td>4</td>
<td>This is a quick win.</td>
</tr>
<tr>
<td>Bee friendly campaign</td>
<td>SANBI, industry role players</td>
<td>Within a year</td>
<td>4</td>
<td>This is a quick win.</td>
</tr>
<tr>
<td>Mass forage planting project – feasibility study</td>
<td>Led by Forage Commission</td>
<td>Within a year</td>
<td>5</td>
<td>This suggestion is extremely important but needs more attention in terms of packing it out and finding the best approach.</td>
</tr>
<tr>
<td>Study to investigate research centre design and funding model</td>
<td>Led by Mike Allsopp in coordination with WCDoA and ARC</td>
<td>Within 6 months</td>
<td>5</td>
<td>There is a definite need for an improved research function and it is strongly recommended that this project should be commissioned sooner rather than later.</td>
</tr>
<tr>
<td>Automation of DAFF database</td>
<td>DAFF</td>
<td>Within 6 months</td>
<td>5</td>
<td>This will be a relatively small project to undertake but will make a significant difference.</td>
</tr>
<tr>
<td><strong>More complete database for industry itself</strong></td>
<td>WCBA to drive this process via SABIO</td>
<td>Within 12 months</td>
<td>5</td>
<td>There is a need for a more complete database for the industry itself, compiled by the industry.</td>
</tr>
<tr>
<td><strong>Licensing of beekeepers</strong></td>
<td>DAFF</td>
<td>Not in the foreseeable future</td>
<td>2</td>
<td>This item will stay on the agenda for re-evaluation in 5-years’ time.</td>
</tr>
<tr>
<td><strong>Registering forage sites</strong></td>
<td>DAFF</td>
<td>Not in the foreseeable future</td>
<td>3</td>
<td>This item will stay on the agenda for re-evaluation in 5-years’ time.</td>
</tr>
<tr>
<td><strong>Building capacity for bee extension services</strong></td>
<td>WCDoA</td>
<td>Within 1 year</td>
<td>4</td>
<td>The 80 existing extension officers need to all receive basic training in terms of beekeeping.</td>
</tr>
<tr>
<td><strong>Appointing 4 specialist extension officers in the Western Cape</strong></td>
<td>WCDoA</td>
<td>Within 1 year</td>
<td>4</td>
<td>There is a great need for specialist extension officers that can deal with the specialist bee issues.</td>
</tr>
<tr>
<td><strong>Setting up structure for Beekeeping Development Chamber</strong></td>
<td>Mike Allsopp (ARC) to include in terms of reference for Apiculture Advisory Council</td>
<td>Within 6 months</td>
<td>4</td>
<td>Mike Allsopp is already tasked with compiling the Terms of Reference for the Apiculture Advisory Council. The Development Chamber needs to be a significant component of this structure.</td>
</tr>
<tr>
<td><strong>Evaluating beekeeping development programmes</strong></td>
<td>ARC</td>
<td>Within 1 year</td>
<td>4</td>
<td>Beekepeing development programmes need an evaluation and rethink.</td>
</tr>
<tr>
<td><strong>Terms of Reference for Apiculture Advisory Council</strong></td>
<td>Mike Allsopp (ARC) to write terms of reference for this council</td>
<td>Within 6 months</td>
<td>5</td>
<td>This idea has already been approved by DAFF and should be visibly supported by WCDoA.</td>
</tr>
<tr>
<td><strong>Industry Unity – one industry association in Western Cape</strong></td>
<td>Three industry associations</td>
<td>Within 2 years</td>
<td>4</td>
<td>This idea should be considered and weighed up by the different bodies in the province. It is a suggestion made by the PTT.</td>
</tr>
</tbody>
</table>
Continuation of task team for implementation, monitoring and evaluation

It should be noted that many of these projects mentioned here are suggestions at this point that should be considered by the industry going forward but that are not set in stone. The purpose of this process was to come up with a practical strategy that can propel the industry towards its desired goals but it would have to be driven by the industry to reach success.

The execution and further development of this strategy is going to be crucial for the success of the industry. It is therefore suggested that the PTT should continue to meet periodically to drive the implementation of the agenda that was now created through the current engagement.

The strategy matrix can be used as a dashboard going forward, where project progress can be measured and reported.

### Strategy Implementation Roadmap

**A** | **C** | **M** | **E**
---|---|---|---
Articulate | Communicate | Monitor | Engage

We want to achieve an integrated approach towards a sustainable bee population (wild and managed) and apiculture – a plan to manage the resource, that will include all role players.

Communication of the strategy to all role players and stakeholders is going to be key in the success of its implementation.

How will we monitor ourselves and track implementation of the report?

Active intervention to ensure actions are carried out. Modify actions if required to reach goals.

**Articulate:**

We want to achieve an integrated approach towards a sustainable bee population (wild and managed) and apiculture – a plan to manage the resource, that will include all role players.

The actions required are articulated well in the Strategy Report. According to the report, the responsibility should be shared between all the different stakeholders or role players. Proposed actions and responsibilities are set out in some detail.
Comunicate:

- Because there are so many different role players to keep into account, communication of its contents is going to be critical.
- Agrifusion officially hands the strategy over to WCDoA to take ownership of it and decide how further communication is going to be rolled out. The strategy needs to be appropriately communicated to:
  - Beekeepers
  - Retailers
  - Growers
  - Other Government levels and departments
  - The wider community

Monitor:

- In order to execute and keep on monitoring the implementation of this strategy, it is going to be critical that the Project Task Team (PTT) continues to exist.
- Apart from the different bodies suggested in the recommendations of the report, our suggestion is that the PTT should merge under WCDoA and grows to have a wider participation from other stakeholders (especially Government).
- This body should meet quarterly under a secretarial desk. There are specific timeframes attached to the recommendations, in order to enable timeous monitoring.

Engage:

The strategy as it is now, should be seen as a fluid document that can and should be amended and engaged with as one moves with the times. This is why it is going to be critical that the PTT meets quarterly and has the backing and support of WCDoA.

One of the key concerns coming out of the strategy is the lack of unity in the industry and amongst all role players. This needs to be addressed through the ongoing existence of the PTT with proper Governmental support and representation. This body then needs to engage with the rest of the role players as it is necessary.
Bibliography


Langenhoven, N. 2017. The state of beekeeping in South Africa.


Project Task Team. 2017. Inputs from team members towards terms of reference for possible strategic projects.


WCDoA. 2017. Media Release: Please refrain from bringing bees into the Knysna area.
Addendums

Addendum A: Terms of Reference for this engagement